KEMPER SYSTEM

THE DUCK

Liquid Waterproofing and Roofing Systems UK Issue 4

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Barnsley (UK)

Kemper System Enables Barnsley Town Hall To Keep Heritage Intact

With its Portland Stone façade and its classical architecture, Barnsley Town Hall is one of South Yorkshire's most distinctive landmarks and best loved buildings.

When Barnsley Council commissioned a project to refurbish the roof as part of a programme of improvements to the building, KEMPER SYSTEM not only had to ensure that the roof was upgraded successfully without any disruption to council services but also had to complete the scheme without any impact on the rest of the building.

Explains Victoria Ramwell, technical sales representative of KEMPER SYSTEM: "The project involved installation of a new warm roof system to enhance the thermal performance of the building as well as providing a new waterproofing surface.

"The town hall remained occupied throughout the programme and the building not only involved challenges in terms of the roof build up and complexity but also has delicate features that we had to protect during the works, affecting the way in which the programme was designed."

To address these challenges, a STRATEX warm roof system with KEMPEROL® 2K-PUR liquid waterproofing membrane was specified by KEMPER SYSTEM. KEMPEROL® 2K-PUR is solvent-free and odourless; ideal for use on occupied buildings where the odours from solvent based or so called low-odour products can be disruptive. KEMPEROL® is also cold applied and therefore can be installed without hot works or the fire risk associated with them.

The existing roof build up consisted of asphalt, followed by a screed and a further layer of asphalt. Barnsley Council were keen to reduce the weight on the roof and so the top two layers had to be removed before installing the new roof.

The remaining asphalt surface varied in condition and a new vapour control layer had to be installed over large areas of the roof surface before installation of KEMPER SYSTEM's KEMPERTHERM insulation board. A tapered insulation scheme was chosen to aid with rainwater drainage.

Stuart Hicks, marketing manager from KEMPER SYSTEM explains: "The STRATEX system is designed to enable the installer to choose between mechanical or adhesive fixings for the insulation and initially the contractor planned to use mechanical fixings. "However, it was clear when the installation team started to drill pilot holes that the vibration could cause damage to the internal décor and potentially the ornamental glass dome inside the building. As a result, adhesive was used to fix the insulation."

As the level of the new insulation was above the lower edge of the glass on the large lantern rooflight, and so as not to interfere with the structure, a drainage channel was created around the roof light and lined with the KEMPEROL® 2K-PUR membrane.

Stuart continues: "The complexity of the roof meant that it would have been extremely difficult to install a new waterproof surface with anything other than a liquid membrane.

"In addition to the roof light, above the internal glass ceiling dome, and the channel we had created around it, we had to contend with a high parapet wall and the outlets that come out of it, numerous skylights, a central plinth and two plant rooms on the roof."

The KEMPEROL® 2K-PUR liquid system enabled the contractor to install the waterproofing to the exact contours of these roof details and seamlessly incorporated all adjoining areas and drainage channels into a single monolithic membrane. Applied wet-on-wet in a single process, the liquid resin saturates a reinforcement fleece and cures to form a tough, flexible substrate that cannot delaminate.

After completing the entire roof, red aggregate surfacing was applied to designated areas to create non-slip maintenance walkways.

"We needed a roof refurbishment that would improve the town hall's thermal performance and protect against water ingress" comments Tony Taylor from Barnsley Council. "The solution from KEMPER SYSTEM not only answered these requirements but, being sustainably sourced and solvent-free, also conformed to our environmental objectives and ensured that we could carry on using the building as normal without any unpleasant odours or disruption."

At a Glance:

Project: Roof refurbishment with warm roof upgrade 1,800m²
Materials: KEMPEROL® 2K-PUR
Contractor: Surface Protection
Client: Barnsley Council

in this issue:

ecobuild your future

London (UK)

Green Roof Waterproofing A Walk In The Parkside

A Greener Approach To Private / Social Schemes...

Telford Homes' Parkside Quarter development on the outskirts of Canary Wharf delivers the ideal response to balancing the commercial realities of residential development alongside the need to create high quality, affordable homes for those who live and work in the capital but do not command the salaries that most private sector London homes require.

The 62 apartments in the development's main five-story block will be marketed to private buyers by Telford Homes, while a separate 4-storey block containing 17 apartments will be let by East End Homes and the housing association will also offer five apartments in a further four-storey block for shared ownership. While the target market for the private and social housing elements of the scheme may be very different, many elements of the specification are the same; including the green roofs that will feature on all three blocks.

Green Surroundings

Designed by David Wood Architects, the Parkside Quarter scheme is named after the acres of parkland that lies adjacent to it on the Isle of Dogs, in an enviable location that is only a few minutes' walk away from the banks of the Thames. The use of green roofs on all three apartment buildings, therefore, connects the residential scheme to its location, creating synergy with its green surroundings.

The green roofs were installed by roofing contractor Cawston Roofing using the cold liquid-applied waterproofing membrane, KEMPEROL® V210, from KEMPER SYSTEM. This was used to waterproof the concrete deck and provide an ideal base for the inverted roof insulation and green roof elements of the project.

Explains Kevin Cawston from Cawston Roofing: "KEMPEROL® V210 is the ideal base for a new build green roof because not only can it be applied quickly in a single process, saving time and labour, but it is also certified as root resistant so the planting used in the green roof will not compromise the integrity of the waterproofing."

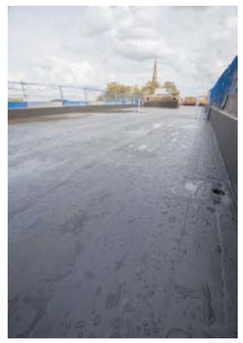
Roof Build Up

Cawston Roofing began by applying KEMPER SYSTEM's EP primer to the substrate to seal the concrete and provide the ideal key for the liquid waterproofing membrane to bond to. Once cured, the installation team then applied the KEMPEROL® V210 resin to the primed substrate, completing the roofs one section at a time.

Explains Stuart Hicks from KEMPER SYSTEM "The KEMPEROL® V210 resin saturates a polyester reinforcement fleece and cures to form a tough and durable, monolithic, seamless membrane with no laminations. It remains permanently flexible to cope with building movement and has a BBA certified service life in excess of 25 years."

Once the roofs had been waterproofed using the KEMPEROL® V210 system, Cawston installed 240mm insulation directly on top followed by a 25ml deep attenuation layer; this enables rainwater to be stored to irrigate the green roof planting while allowing any excess water to drain off the roof. Finally the growing medium was installed along with plug plants to create the finished green roofs.

Stuart Hicks adds: "Specification is extremely important when it comes to green roofs. Arguably the most important element is the waterproofing as the primary function of the roof is to protect the building. This must be robust enough to last as any leaks in the membrane can be difficult to access or repair once the green roof is established. Choosing a cold liquid applied waterproofing system, such as KEMPEROL® V210, overcomes the common failures of many roofing systems as there are no seams, laps or joints that can be compromised. Client preferences and aesthetics have a role to play in the choice of green roof plants, but a key consideration should always be the location and prevailing climatic conditions as these govern the amount of light, heat, shade and moisture the roof will receive. At Parkside Quarter, the green roofs will create continuity across the private and social housing elements of the scheme as well as connecting it to its local environment."



At a Glance:

Project:	**Multiple Green Roofs**
Materials:	**KEMPEROL® V210**
Client:	**Telford Homes**
Atchitect:	**David Wood Architects**
Contractor:	**Cawston Roofing**

The Leela Palace New Delhi (India)

One Of The World's Best Of The Best Hotels

Right at home among the grand landmarks of New Delhi's Diplomatic Enclave, the Leela Palace New Delhi makes a significant statement in terms of architecture and intent. The palace style hotel architecture is inspired by Lutyens.

In 2012 the Leela Palace New Delhi was the only hotel in India to be named among the "best of the best" hotels in the world by Robb Report, which is a definitive authority on the most prestigious luxury brands around the globe. The culmination of an entire year's search for the most exceptional new products and services on earth, Robb Report's 24th annual "best of the best" hand picked the hotel for offering the finest luxury, placing the hotel amongst the elite in the world.

Commenting on the recognition, Capt. C.P. Krishnan Nair, chairman and founder of the Leela Palaces Hotels and Resorts said, "Building a modern palace hotel in the heart of India's capital city was a dream come true for me. My two sons, Vivek and Dinesh, and I are proud to have created the only hotel in India now recognized as one of the world's best. We built this hotel against all odds and this prestigious honour reaffirms our commitment towards serving the most discerning travellers and leisure seekers. With just one year of operation under our belt, we have been ranked amongst the world's best and this is just the begining."

KEMPEROL® 022 was specified and used in the wet rooms, bathrooms and sanitary facilities. KEMPEROL® 022 is a system of the highest quality used to waterproof wet room floors and walls with direct or indirect load. The solvent free product was developed especially for indoor applications underneath tiles.

KEMPEROL® 022 has full surface adhesion to the substrate and forms a barrier coat underneath the tiling, which prevents the ingress of moisture into the fabric of the building.

Cleethorpes (UK)

Refurbishment Scheme Makes A Splash In Cleethorpes

Sitting on the seafront in the popular Lincolnshire resort town, Cleethorpes Leisure Centre is a striking 1980s building with full height windows that maximise the views of the shoreline.

The facilities had always been operated by North East Lincolnshire Council's outsourcing partner and had never undergone any significant refurbishment work but, in 2012, all the Council's leisure assets were transferred to 'Lincs Inspire', a specially formed operating company with a board made up largely of councillors.

Explains Jon Wilcox from NE Lincolnshire Council: "With Lincs Inspire came a more aspirational focus on maximising the leisure centre's potential and attracting more users. The first area identified for improvement was the changing arrangements and we turned to Sport England for funding to support a refurbishment from old-style, segregated changing rooms to a more family-friendly unisex changing village."

The funding bid successfully raised 50% of the cost of revamping the changing facilities and was scheduled to go ahead, requiring a four-month shut down. With the exterior showing signs of wear and tear, leaks from the roof causing damage to the ceiling tiles and a dated 'Club Tropicana' style pool area, further works to Cleethorpes Leisure Centre would be required within the foreseeable future. As a result, the decision was taken to combine the changing rooms scheme with a more comprehensive leisure centre-wide refurbishment to enhance the facilities and improve the fabric of the building in a single shut down period, saving costs and disruption by combining all the works into a single £2 million project.

External Improvements

Designed by the Council's architectural services partner, Cofely and delivered by main contractor, Gelder, the resulting six-month programme, involved both internal and external refurbishment to improve the fabric of the building, update the interior design and layout and maximise the appeal of its seafront location.

Jon continues: "The 5,000m² roof was a major area of concern because water ingress had already started to discolour some of the ceiling tiles in the pool area so it was affecting both the internal environment and showing evidence of failure. We needed a system that could be installed quickly without the need for a strip out of the existing roofing materials. The chosen system also had to be able to withstand the marine environment, strong winds and high levels of UV that the leisure centre is subject to in its coastal location: Kemper System's KEMPEROL® V210 cold liquid-applied system was ideal."

The roof was cleaned and prepared and the KEMPEROL® V210 waterproofing system was then applied on top of the existing failed asphalt roof. Applied wet-on-wet in a single process, the KEMPEROL® resin saturates a non-woven polyester reinforcement fleece and cures to form a seamless durable, UV stable, monolithic membrane that bonds directly to the substrate.

Stuart Hicks from KEMPER SYSTEM explains: "The KEMPEROL® V210 system has been designed to withstand even the harshest conditions. The direct bond created across the entire overlaid substrate when the resin cures greatly reduces the risk of wind uplift during stormy conditions, which is important for a coastal project like this."

The leisure centre's external cladding was also replaced with a new, hardwearing system and feature lighting was introduced in the eaves of the roof to enable Lincs Inspire to light up the building in mood colours during the evening.

Poolside Changes

The new changing facilities that were the original trigger for the whole project were created by reconfiguring the space in the existing changing room areas to create a communal changing village. While the former single sex arrangement had made changing difficult for lone parents with children of the opposite gender, the new changing village features individual and family rooms along with the required toilet, shower and disabled access provision.

The mechanical and electrical (M&E) services were also upgraded to support the changes to the building and improve the leisure centre, creating a more comfortable and family-friendly environment.

Jon continues: "In the past, the air temperature had been good in the poolside areas but the changing areas had rarely been warm enough, so more efficient HVAC systems were installed to provide a suitable temperature throughout the leisure centre."

The poolside itself was also a key focus for improvement. The original fit out included a palm tree which obscured the view of the coastline through the centre's panoramic windows and looked very dated. The original fit out had also included a water slide that exited the building and came back inside again, and this had been closed for some time for safety reasons.

The palm tree has been replaced by an Art Deco-style statue which creates interest in the pool area without blocking the view. The slide, meanwhile, has been replaced by a new 34m indoor-only slide creating a family-friendly attraction in the leisure pool which is both safer and easier to maintain. The general poolside area has also been upgraded, including replacement of the floor tiles with a durable, anti-slip resin floor and new feature lighting.

Jon continues: "The pool itself was not altered but had to remain full while the poolside works were carried out because of the level of flex that could have caused damage to new floor and wall finishes if the weight of all that water was introduced after the refurbishment was completed."

Aspirational Aspect

The leisure centre is now completed and welcoming users once again. Thanks to the de-cluttered internal spaces it also provides great views of the seafront.

Jon adds: "The whole concept was to create a visual synergy between the beach outside and the pool inside. NE Lincs Council has worked hard to ensure Cleethorpes has a clean beach and excellent water quality and this refurbishment can be seen as an extension of that commitment."

At a Glance:

Project:	**5,000m² Roof Refurbishment**
Materials:	**KEMPEROL® V210**
Contractor:	**Granflex**
Client:	**NE Lincolnshire Council**

Telford (UK)

Durable Roofing On Show At Telford International Centre

A KEMPEROL® cold liquid applied waterproofing membrane is being used to provide a long-term solution to wear and tear, reducing the maintenance requirements at event and exhibition venue, Telford International Centre.

The International Centre is one of the UK's larger regional venues and attracts national exhibition, corporate and association business from all over the country.

Owned by Southwater Event Group, the venue offers 15,000 sq m of flexible event space over three event halls and two purpose-built conference and banqueting suites. And The International Centre is right at the heart of the new £250 million Southwater development which has created a thriving convention quarter right outside the front door.

Southwater Event Group has invested over £50 million in the venue and its Group hotels to ensure guests and visitors experience the very best service at all times.

In the latest phase of development, attention has now turned to the roof at The International Centre. The single ply waterproofing membrane has received a number of unsatisfactory repairs over the years. As a result, the decision was made to overlay the single ply roof with a cold liquid-applied membrane as part of a rolling programme of improvements. The first section has now been completed using KEMPER SYSTEM's KEMPEROL® V210.

Installation Challenges

The first section of roof that has been refurbished has a range of complex details, plant and equipment and features which are characterised by multiple vulnerable laps and seams in the single ply membrane. Having experienced the limitations and failure of the single-ply system, the client's options in terms of utilising alternative systems to adequately waterproof the detail of the ventilation fans, extensive air conditioning plant, multiple upstands and complex valley gutter details all located on a diamond-shaped section of roof, created an additional specification and installation challenge. This led to the specification of a liquid waterproofing system that could be cold applied and incorporate not just the most vulnerable areas, but the whole roof, without any of the seams, laps and joints associated with the old system.

Liquid Flexibility

Roofing contractor Profile Industrial Roofing Services Limited, began by preparing the 800m² first phase roof area to ensure the substrate was clean, dry and stable. A primer was then applied to each section and allowed to cure prior to the application of the KEMPEROL® V210 resin. The resin saturates a non-woven polyester reinforcement fleece which is immensely strong and tear resistant, and cures to form a monolithic, seamless membrane that cannot delaminate and bonds directly to the substrate.

Use of a liquid system helped to overcome the unusual diamond shape of the roof because the reinforced liquid resin can be applied to the exact layout of the roof.

On site engineers painstakingly removed individual legs supporting the air conditioning plant, one at a time, so that the KEMPEROL® V210 membrane could be applied underneath the support structures without disturbing the air conditioning and ventilation units. Applying the waterproofing membrane under the details in this way removed the potential for leaks in those areas of the roof where there had been higher levels of failure in the past.

Similarly, use of a liquid applied system also helped to reduce the vulnerability of the valley gutters on the refurbished section of the roof. Once again, failure of the single ply membrane joints had been evident in this area. With a liquid system the exact contours of the valley gutters could be accommodated seamlessly with the Kemperol resin and flexible fleece based waterproofing system.

In areas there was very limited access for application of the waterproofing membrane with just a 15-20mm space for applying the system. Thanks to the wet-on-wet installation process, however, the contractor was able to address this complex detailing with the KEMPEROL® V210 system, creating a seamless return around the roof section perimeter.

Leak Free Future

As more and more companies focus on future maintenance costs and risk of disruption as part of the business case for selecting a roofing system, the ease of installation, durability, flexibility and seam-free nature of liquid applied systems have become widely recognised for their whole life value.

For a corporate venue like Telford International Centre, however, the importance of remaining leak free is based not only on the cost and disruption of repairs but also on the damage that leaks can cause to the equipment and events within the building. That is why Telford International Centre has begun a new approach to making long-term improvements designed to provide a BBA certified service life for the roof for the next 25 years.

NY Resorts World & Casino, NY (USA)

Finish "In the Money" At NY Resorts World

No contractor can count on the weather. But the worst winter in the New York area in decades put The Jobin Organization, Inc. (Farmingdale, NY) to the test in meeting installation deadlines for NY Resorts World & Casino.

KEMPEROL® V210 was specified for over 90,000sq.ft. of stadium roof deck restoration above a spectator area of Aqueduct Raceway, now part of the combined raceway/casino complex.

The self-sealing liquid applied membrane was ideal for flowing around the many difficult penetrations, from steel support beams and angled curves to electrical raceways and conduits. Plus, the KEMPEROL® V210 could be applied in cold weather (as low as 5°c), which was good news. But the endless snow was not.

The job was originally scheduled to begin in early January with a late June finish date. However, a record number of snowstorms pushed the actual start date for roofing into March. Penalties loomed for late completion, yet with reputations on the line, there was no room for compromise.

"Both the scheduling and logistics were challenging. At one time, the contractor had as many as 50 – 100 people on the site. They had to crane materials up to one roof, and then used mechanical ladders & conveyors to get material up & down," recalls TJO General Superintendent Steve Guarino. "We were dealing with winter weather, ripping the old roof off, and keeping a waterproof system every day."

Quality waterproofing materials are always important, but optimal protection also depends on a quality installation.

The Jobin Organization's highly-skilled team of roof mechanics – all trained in by KEMPER SYSTEM – met the challenge. The team satisfied all job specifications, often working two shifts, with KEMPER SYSTEM inspectors on site daily and working closely with Jobin Foreman John Esposito.

The job finished not just "on the money," but in it – and ahead of schedule.

LVR LandesMuseum, **Bonn (Germany)**

Museum Exhibits Protected By KEMPEROL®

Guaranteeing the correct temperature and relative humidity in a museum environment is a science in itself. Depending on their age and composition, the exhibits require a special and, above all else, stable room climate to protect and preserve the collections. The sensitivity of the objects to moisture basically depends on their material. Wood, for example, requires a higher level of relative humidity than metal or paper. Needless to say, the greater the historical importance of a museum's collection, the more complex the HVAC plant installed in the building.

One of the oldest museums in Germany

The LVR LandesMuseum Bonn, the Rhenish State Museum for archaeology, art and cultural history, is not only the largest museum of the Rhenish Regional Authority (LVR), the museum founded in Bonn in 1820 as the Rhenish-Westphalian Museum of Antiquities is also one of the oldest museums in Germany. Over the years the building has been extended and modernised many times. It re-opened as a themed museum in 2003 after extensive renovation work.

The HVAC technology, which ensures the rooms remain at 20°C and 50% RH, is housed in three separate rooms at the top of the building. Two redundant systems, which help to condition 100,000cm³ of air an hour and are capable of controlling 15 separate climate zones, are provided for the 6,000 m² of permanent and temporary exhibition space. To prevent water penetrating the ceilings of the exhibition rooms below in the event of the HVAC systems leaking or liquid spillage during cleaning and maintenance tasks, the floor surfaces of the HVAC plants were re-waterproofed.

Professional knowledge, cost-effective solution

The installation of liquid-applied waterproofing demands a high-level of professional knowledge and practical expertise. For the architects, it was very important that the partner chosen for this complex task was reliable, experienced and highly skilled. Norbert Stuendl, branch manager of Holl in Remseck, has been using KEMPEROL® successfully for many years.

The liquid-applied waterproofing is reaction resin based. A chemical reaction ensures that the waterproofing is permanently elastic and crack bridging after curing and bonds fully with the substrate across the entire surface during the curing phase. Therefore, in the event of a leak, the risk of water infiltration is fully eliminated. Any liquid collects on the surface of the waterproofing and either evaporates or is mechanically removed or drained off via an emergency drain. Liquid material is completely cold applied, i.e. without the use of a naked flame, and adapts to every shape of the substrate. Architectural details are much easier to waterproof than with traditional products. And minimum system depths do not prove a problem.

Protected exhibits

The KEMPEROL® seamless liquid waterproofing was installed as high as possible on the side walls, the concrete plinths of the HVAC plants and at all upstands and penetrations. Thanks to this "bathtub design", water can be drained off in a controlled manner via an emergency drain in the event of leakage or accidents. The cured surface is able to withstand mechanical loads and can be walked on for maintenance purposes. Since the HVAC plants are only accessed by technicians, an additional wear-resistant layer is not necessary.

Each HVAC plant in Bonn could only be switched off during an exact and tight time frame. During this period, the redundant systems were responsible for correct temperature and humidity control in the exhibition rooms. All the tasks were, however, completed successfully and on time.

The LVR-LandesMuseum Bonn, the Rhenish State Museum for archaeology, art and cultural history, is one of the oldest museums in Germany.

The museum exhibition rooms below the HVAC plants are protected by KEMPEROL® waterproofing.

The concrete plinths of the HVAC plant were also waterproofed with KEMPEROL®, as well as all of the upstands.

Hamburg (Germany)

Hamburg's Highest Hotel Roof Sealed With KEMPEROL®

For 30 years it was regarded as the highest building in Hamburg, until the new Elbe Philharmonic Hall was built in 2013, and surpassed it by a few metres. What is still undisputed, however, is that the 4 star Radisson Blu Superior with its 556 rooms continues to be the largest and tallest hotel in the Hansestadt with the best views of the city and Lake Alster.

The vertically structured high-rise building has nine segments set against each other, with staggered roof tops each over 100m high surrounded by a closed parapet.

Up here even in the sunny summer weather a stiff breeze still blows. The unlimited view of the Hamburg city landscape is unique. Hotel guests however do not come quite as high as the access is prohibited. The top five floors are the realm of the technical and service areas. Electrical engineering, communication systems, air conditioning, and the "nerve center" of the hotel elevators are all housed here. Part of the roof is rented by telecommunications providers where their technical equipment and masts are installed.

Due to age and deterioration of the existing roof covering the roof had begun to fail with moisture finding its way into the underlying utility rooms. With potential damage to the expensive technical equipment and sensitive mobile technology, occasional repairs were no longer in question and a long-term solution was needed.

Without disruption, a safe cost-effective overall solution in this extremely challenging environment was required. The question of how and what should be sealed, caused some headaches.

All lifts end on the 27th floor, so there was an issue with getting materials on to the roof and waste materials off. For fire safety reasons work had to be undertaken without hot works and naked flames.
Outdoor lifts to a Height of more than 100 meters were not available and

removal and disposal of the exiting substrate would have been a logistical nightmare.

The individual roofs have many connections, details, outlets and penetrations, the classic weak spots on a roof, which didn't facilitate making the job any easier. Nor did the many detail points in confined spaces. The functionality and service life of a flat roofs depends very much on the quality of the waterproofing and sealing of the details. And of course, all of the work had to be done without any interference with the operation of the hotel.

The more complex and rich in detail the flat roof structure, the more difficult the sealing work. Klaus-Dieter Delfs, owner of KD roofing, advised his clients that the most cost-effective solution was to have a liquid waterproofing system - KEMPEROL®.

KEMPEROL® can be laid over the existing substrate without the need to remove and dispose to landfill.

The liquid membrane adheres across the entire surface of the substrate and provides no point of attack for wind uplift – dispensing with the need for a ballast.

The liquid waterproofing resin seamlessly incorporates all of the details on the roof and cures to form a homogeneous, continuous membrane.

KEMPEROL® is a cold liquid applied (no flame) processes - fire hazard is not an issue.

Logistically the materials could easily be taken on to the roof manually via the maintenance access.

KEMPEROL® 2K-PUR is solvent-free and odourless and particularly suitable for this application as a priority ruling was that chemical smells were not allowed inside the building that may affect the guests and spoil their stay at the hotel.

Klaus-Dieter Delfs is an experienced KEMPEROL® contractor. He has been using KEMPEROL or over 30 years in which time the application method hasn't changed. The first step was to prepare the old bitumen surface to provide the optimum surface for the adhesion of the KEMPEROL® 2K-PUR. Next the liquid resin was applied to the surface and a reinforcement fleece laid in to the wet resin. Further resin is then applied immediately over the fleece until completely saturated. All excess resin, air bubbles and creases are removed and the resin allowed to cure.

The Radisson Blu - The tallest hotel in Hamburg

At a Glance:

Project: Sealing of seven roof spaces more than 100m above sea level, 680m² + 800m connections
Client: Investment Group
Architects: Jost Schramm, Gert Pempelfort
Material: KEMPEROL® 2K-PUR
Contractor: KD Dachabdichtung, Neumünster

London (UK)

KEMPEROL® Keeps India High Commission Dry

India House, the High Commission of India's home in the UK, will continue to offer a prestigious consulate for generations to come thanks to a facelift designed by Landers-Associates and contracted by Woodgrove Contractors Ltd using KEMPER SYSTEM's KEMPEROL® V210 waterproofing membrane.

The nine-storey building in Charing Cross has undergone a complete external refurbishment, including stone and brick repairs, stone cleaning and a new roof overlay using the KEMPEROL® V210 cold liquid-applied waterproofing system.

The Woodgrove team carried out minor repairs and preparation of the existing 500m² asphalt roof to ensure a clean, even surface before beginning application of the KEMPERTEC primer and KEMPEROL® V210 waterproofing system.

The KEMPEROL® V210 liquid resin saturates a non-woven reinforcement fleece that is immensely strong and tear resistant, and cures to form a permanently elastic monolithic membrane that cannot delaminate. It is tough and durable, UV resistant, and can even accommodate standing water. The upstands, various skylights penetrations and details on the roof were all seamlessly waterproofed by the Woodgrove team using KEMPEROL®.

The refurbishment also involved application of the KEMPEROL® V210 membrane on the asphalt substrate of the building's feature balconies.

Comments Richard Symons at Woodgrove: "The ease and speed of application offered by the KEMPEROL® V210 system made it possible to complete the roof within a larger 20-week refurbishment programme, including the balconies, while providing a durable, watertight surface with a BBA certified service life in excess of 25 years."

Barton Square, Manchester (UK)

KEMPEROL® The Key Element In Centerpiece

Barton Square in Manchester was completed in 2008 and forms part of The Trafford Centre, one of the largest shopping centres in the UK.

The central plaza of the new 19,000sqm shopping area, is surrounded by colonades and includes a magnificent fountain, more than 9m high, which dominates the open space. The Baroque-like fountain is surrounded by golden mermaids and dolphins squirting water.

In order to ensure that the water remains in the circuit and does not gradually seep into the subsoil, the lower basin was first given a coat of KEMPERTEC EP Primer and then waterproofed with KEMPEROL® 2K-PUR. As polished stone elements would be laid on the waterproofing, protection against alkalis was also provided. Once the KEMPEROL® 2K-PUR had cured, the surface was given a coat of KEMPERTEC EP Primer with KEMPERDUR NQ 0712 Natural Quartz worked into the surface.

A white solution was required for the basin on top of the central white pedestal. In this case the waterproofing was carried out with KEMPEROL® 1K-PUR, which is a single component resin applied directly out of the container. Once cured a high quality decorative surface was ensured by applying KEMPERDUR PU-2K Finish. Marble chippings were worked into the wet coating and the surface finished with a coat of KEMPERDUR Finish. The fountain is crowned by a third, smaller basin of bronze.

Claye Souilly (France)

A Wink To KEMPER SYSTEM

In Claye-Souilly, the shopping centre built in 1972 has been extended in a project inspired by nature. Indeed, the architectural firm CVZ was inspired by the regional forest from Claye Souilly which is nearby.

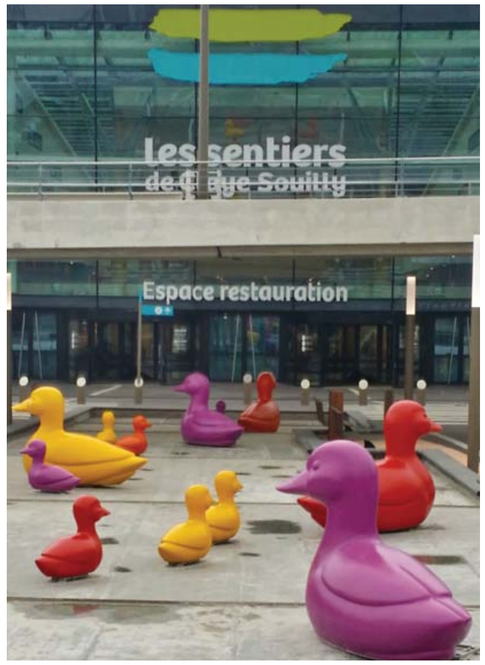
The architect proposed a building with wooden colors such as white, brown or beige. This hint of nature is reinforced by the creation and installation of big animals specially made by a form artist and sculptor.

As the shopping mall expands, so does the outside. And for the reception of visitors, a large fountain has been built to make the connection between the carparks and its entrance.

The cold liquid applied waterproofing system, KEMPEROL® 2K-PUR with its environmental credentials, fits naturally in this project which was certified BREEAM level "very good". Moreover, the requirements were a direct application of the waterproofing membrane onto the substrate, a dark colour and a waterproofing that can remain visible. KEMPEROL® meets all these criteria;

it is indeed a liquid resin which is self-coloured and offers various colors, including a dark grey.

A fun fact, the animals added to the pond are... ducks; a nice wink to KEMPER SYSTEM!



THE DUCK
The Magazine for Liquid Waterproofing and Roofing Systems

Published by: KEMPER SYSTEM Ltd
UK Editing / Design: Stuart Hicks

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Wimbledon (UK)

King's College School Bowled Over By KEMPEROL® Roof Refurbishment

Founded by Royal Charter in 1829, King's College School in Wimbledon is one of the most academically successful schools in the world. The school caters for boys aged 7-18 and admits girls aged 16-18 to its sixth form, putting a significant emphasis on sports alongside academic study.

Ensuring the facilities match the prestigious school's reputation is a key priority at King's College and the school put in place a £30-40 million master plan in 2012, which is currently being rolled out. Alongside the capital investment programme, the school remains focused on maintaining and upgrading its existing estates, including a recent project to replace the roofs on both the sixth form centre and the cricket pavilion.

Roofing Considerations

The initial requirement was to replace the ageing felt surface on the sixth form centre roof. The roof structure itself was sound but deterioration of the felt substrate was in danger of compromising its integrity.

The school's maintenance team considered stripping out the felt roof and re-felting it but this would have involved practical and potentially financial implications.
Explains Paul Brown from roofing contractor, Avante-Garde Roofing: "There is a considerable amount of air handling equipment on the roof of the sixth form centre and any project to re-roof the building with felt would have necessitated removing the plant and replacing it after the project. That complication would have added both time and cost to the programme.

"Re-felting would also have required hot works, which has health and safety implications in a live school environment. It can also be very difficult for some felt roofing contractors to get insurance on these types of roofs because of the fire risk associated with the torches."

Practical Solution

The chosen alternative to stripping out and replacing the felt on the sixth form centre roof was KEMPER SYSTEM's KEMPEROL® V210; a cold liquid-applied waterproofing membrane that bonds to the existing substrate. The membrane is applied in a single process as a liquid resin which saturates a non-woven reinforcement fleece which is immensely strong yet flexible, durable and tear resistant. The system then cures, creating a U/V resistant, monolithic membrane that provides seamless waterproofing protection with a BBA accredited service life in excess of 25 years.

One of the key benefits of using the KEMPEROL® waterproofing system for the sixth form centre roof was that it enabled the contractor to simply raise the extensive air handling equipment located on the roof and apply the system beneath it, lowering the units back into place once the membrane had cured. Not only did this avoid any time-consuming and logistically complex plant removal element to the scheme but it also ensured that there is a seamless waterpoofing membrane that protects the entire roof, including the areas underneath the equipment.

Use of the cold liquid-applied system also made it easier for the Avant-Garde team to install the waterproof membrane around the roof's numerous skylights ensuring a watertight seal around each one.

Finally, as Paul Brown points out: "Because KEMPEROL® is cold applied, there is no fire risk whatsoever."

From Classroom to Cricket

King's College was surprised to find that a re-roofing project anticipated to take several weeks in fact took less than a month.

"Avant-Garde did such an excellent job," comments King's College head of maintenance Jason Sprague, "that we asked them to re-roof the cricket pavilion, which had started to leak."

Replacing the pavilion's asphalt balcony roof entirely would have been cost prohibitive so the school chose KEMPEROL®, which was installed onto the existing prepared asphalt substrate. Rubber matting was then installed on top of the KEMPEROL® for extra protection against cricket shoe studs.

Jason adds: "We have been impressed by both the speed of installation and the lack of disruption during both roof refurbishment schemes and the seamless finish the KEMPEROL® provides will ensure our students enjoy dry classrooms and match breaks for generations to come."

At a Glance:

Project: **600m² Roof Refurbishment**
Materials: **KEMPEROL® V210**
Contractor: **Avante-Garde Roofing**